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CONTENTS

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THE APPLICABILITY OF THE LIFE-CYCLE HYPOTHESIS OF SAVING TO JAPAN*

By Charles Yuji HORIOKA**

I Introduction

The high rate of saving in Japan, especially the high rate of household saving, is a well-known phenomenon but one which is still not fully understood in spite of the considerable research that has been conducted on the subject.[1] In particular, little is known concerning the issue of whether the life-cycle hypothesis applies to Japan and whether it can explain the high rate of household saving in Japan. I believe that it would be interesting to investigate these issues more fully for the following reasons:

First, such an investigation might shed some light on the factors underlying the high rate of household saving in Japan.

Second, although extensive empirical tests of the life-cycle hypothesis have been conducted using data from the United States and other countries, the evidence is frequently contradictory, and as a result, economists are deeply divided concerning the validity and explanatory power of the life-cycle hypothesis.[2] Therefore, additional evidence of any kind would help to settle the controversy.

Third, it would be interesting to ascertain whether the life-cycle hypothesis is applicable in a non-Western society with a different culture, set of values, etc. A key difference is the greater strength of the family unit in Japan, as a result of which intergenerational transfers and extended-family living arrangements are far more common. Such values and practices have allegedly weakened in recent years in Japan, but the evidence to be presented later will suggest that they are still very much alive and hence capable of influencing household saving behavior in a number of important ways.

Fourth, in addition to the cultural differences mentioned above, Japan also exhibits a number of institutional differences which have a bearing on household saving behavior. For example, Japan is the only country I know of in which a sizable fraction of the workforce receives a lump-sum severance payment upon retirement that is typically equal to two-and-a-half to four times their regular annual salary. Moreover, some corporations pay pensions in lieu of, or in addition to, these retirement payments, and

* I am indebted to Hwang, Hueg Jane, and Yap, Nget Wah, for able research assistance.

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1) See, for example, Blumenthal (1970), Kanamori (1961), Komiya (1966), Mizoguchi (1970), Mizoguchi (1973), and Shinohara (1982).

2) The literature is too vast to survey comprehensively, but some key references are Danziger et al. (1982/83), Menchik and David (1983), Mirer (1979), King and Dicks-Mireaux (1982), and Kotlikoff and Summers (1981).

public old-age pensions, which were formerly relatively meager, have been greatly improved, especially since 1973, and now exceed the level of benefits prevailing in the United States. I believe that an analysis of the impact of these factors on household saving behavior would be interesting and that the life-cycle hypothesis, as extended by Feldstein (1974), is the most appropriate framework for such an analysis.

The organization of this paper is as follows: I first present a brief exposition of the life-cycle hypothesis of saving in Section II. In Section III, I show that the life-cycle hypothesis predicts a high household saving rate for the case of Japan and hence that it would be capable of explaining Japan's high household saving rate *if it were valid*. In Section IV, I present evidence concerning the validity of the implications and basic premise of the life-cycle hypothesis in Japan using a variety of data sources (both household budget surveys and attitudinal surveys) and conclude that the life-cycle hypothesis is apparently of only limited validity in Japan. Finally, in Section V, I formulate a modified version of the life-cycle hypothesis that incorporates intergenerational transfers and suggest that it may be of greater validity than the conventional life-cycle hypothesis in the case of Japan.

II The Life-Cycle Hypothesis

The life-cycle hypothesis states that,

> on the average, earning power tends to dry up well before the termination of life and that the preferred allocation of resources over life will typically call for a rate of consumption, after this drying up, on a scale commonsurate with earlier consumption. Under these conditions, households must, on average, save in the earlier part of their life in order to accumulate a stock of wealth (possibly in some form of retirement insurance) which will eventually be used to support consumption through dissaving in the later part of their life (Modigliani (1966), p. 163).

In short, the hypothesis states that individuals save during their working years to finance their consumption during retirement.

Given a number of assumptions (e. g., that there are no bequests, that the interest rate is zero, that it is optimal for the consumer to consume his income at an even rate throughout the balance of his life, and that income is constant), the life-cycle hypothesis implies that the individual saving rate of pre-retirement individuals will be:

$$(1) \qquad s=\frac{S}{Y}=\frac{M}{L},$$

where s=the saving rate
S=saving
Y=income
M=the retirement span
L=the life span of economic significance (i. e., $L=M+N$, where N=the earning span)

(Modigliani and Brumberg (1980), pp. 130-136). The intuitive rationale for this expression is as follows: since by assumption the individual desires to maintain a constant level of consumption throughout his lifetime, he must accumulate enough during his working years to maintain the same level of consumption during his retirement years. This requires accumulating CM within N years, where C=annual consumption. In other words, it is necessary that $S=CM/N$. Substituting $N=L-M$ and $C=Y-S$ into this expression yields:

$$(2) \qquad S=\frac{(Y-S)M}{L-M}.$$

Solving equation (2) for S/Y yields equation (1).

Turning to the aggregate household saving rate, the life-cycle hypothesis implies that, given certain assumptions,

> in a stationary economy of constant population and productivity... the aggregate rate of saving would be zero as the positive saving of the younger households, in their accumulation phase, would be precisely offset by the dissaving of the retired households drawing down their earlier accumulation (Modigliani (1966), p. 163).

However, if we drop the assumption of stationarity and

> let income grow as a result of population growth or of growth in income per employed resulting from increasing productivity, [w]e can then show that saving will become positive, even in the absence of bequests (Modigliani (1966), p. 166).

For example, if population grows at the rate p,

> [t]he effect of this growth will be to increase the ratio of younger households in their accumulation phase to older households in their dissaving phase, giving rise to a positive net flow of saving (Modigliani (1966), p. 166).

Moreover,

> the proportionality factor s, or saving-income ratio, may be expected to increase with p, as the relative frequency of households in their accumulation phase will tend to increase monotonically with p,... (Modigliani (1966), p. 166).

With respect to productivity growth, if

> population is stationary but average income earned at each age, and hence also aggregate income, rises gradually in time, as a result of increasing productivity, [t]his cause of growth will also tend to result in a positive rate of saving.... This is because each successive cohort will enjoy life earnings larger than the preceding ones, and therefore a larger level of consumption at each age, since by assumption the distribution of consumption over life remains constant in time. It follows in particular that the currently active households will be aiming at a level of consumption in their retirement period larger than the consumption enjoyed by the currently retired households belonging to a less affluent generation. To support this future level of retired consumption the active households will have to save currently on a scale exceeding the dissaving of retired households. Thus,

> even if population were stationary, net aggregate saving will tend to be positive (Modigliani (1966), p. 167).

(Explicit formulae for the aggregate household saving rate which take account of population growth and productivity growth are derived in Modigliani and Brumberg (1980), pp. 140-143.)

Thus, as Modigliani observes,

> our model of individual behavior is seen to imply that in the long run the proportion of aggregate income saved depends not on the level of income as such but, rather, on the rate of growth of income; furthermore, for a given growth this proportion is very nearly the same whether the growth results from an expanding population, increasing productivity, or both (Modigliani and Brumberg (1980), p. 143).

To summarize, we have seen that, given our assumptions, the individual saving rate of pre-retirement individuals will equal M/L (the ratio of the individual's retirement span to his lifespan), meaning that it will be higher, the longer is the retirement span of individuals relative to their lifespans. This result implies, of course, that M/L will also exert a positive impact on the aggregate household saving rate as long as the aggregate saving rate is positive to begin with. In addition, we saw that, although the aggregate saving rate of the household sector as a whole will be zero in a stationary economy of constant population and productivity, it will be positive if population and/or productivity are increasing. Moreover, the aggregate household saving rate will generally be higher, the higher is the rate of increase of population and productivity growth.

III Life-Cycle Saving in Japan

In this section, I will temporarily assume that the life-cycle hypothesis is valid in Japan and use the foregoing theoretical results to determine the level of the aggregate household saving rate implied by the life-cycle hypothesis.

In the previous section, we found that the aggregate household saving rate will be higher, the higher is:

(1) the ratio of the retirement span to the lifespan,
(2) the rate of population growth, and
(3) the rate of productivity growth.

I will now present data from a number of sources which allow an international comparison of the levels of these variables.

(1) The Ratio of the Retirement Span to the Lifespan. Since it is the expected retirement span that will influence individual saving behavior, we desire information on expected retirement age and life expectancy. The customary retirement age at most Japanese companies was formerly fifty-five, but an increasing number of companies have adopted a later retirement age (with sixty being the most common) in recent years; as a result, the average retirement age at private corporations is now fifty-seven to fifty-eight.

International data on retirement ages are difficult to obtain, but it appears likely that even a retirement age of sixty is early by international standards. (For example, the retirement age in the United States has traditionally been sixty-five, but the law now states that employers cannot force workers to retire before age seventy.) It must be noted, however, that the Japanese retirement age figures just cited refer not to complete withdrawal from the labor force but merely to retirement from "permanent employee" status. It is relatively common for Japanese workers to continue working for many years after formal retirement, either in the same company, a subsidiary of the company, a different company, or on a self-employed basis. In fact, despite the relatively early "retirement" age, the labor force participation rate of the aged in Japan is one of the highest among the developed countries. As shown in Table 1, the labor force participation rate of males aged 65 and over is 40 to 46 percent (depending on the data source), whereas the corresponding figure is 17 percent for the United States and 3 to 32 percent for the other Organization for Economic Cooperation and Development (OECD) member countries (with the exception of Turkey, which has a labor force participation rate of aged males of 44 percent).[3] If the Japanese figures are broken down further, one finds that the labor force participation rate is 57 to 65 percent for males aged 65 to 69, 38 to 45 percent for those aged 70 to 74, and 19 to 23 percent for those aged 75 and over (again, depending on the data source). Thus, the labor force participation rate of aged males remains above fifty percent until about age 70, which is a full ten to fifteen years after formal retirement. Moreover, the labor force participation rate of males remains quite high even after age 70 (even after age 75 for that matter) and is much higher than the corresponding figure for most other OECD countries in every age group above 65. Thus, it can be seen that although formal retirement occurs earlier in Japan, complete withdrawal from the labor force occurs much later than in most other OECD countries, and this will tend to shorten the retirement span of Japanese workers. (It should be noted, however, that the labor force participation rate of aged males is generally at or above the Japanese level in many developing countries. Moreover, it should also be noted that, while complete withdrawal from the labor force occurs relatively late in Japan, there is typically a substantial reduction in income after formal retirement.)

Turning now to an international comparison of male life expectancy, Table 2 presents figures on the life expectancy of males at birth and at age 65 for the OECD countries. As this table shows, Japan's life expectancy at birth is highest of all OECD countries (having recently surpassed that of Iceland) and her life expectancy at age 65 is second only to Iceland. Male life expectancy at birth is 73.79 years in Japan as compared to

3) I present data on the labor force participation rate of the aged and on life expectancy for males only because, despite recent increases in the labor force participation rate of females, it is still generally the male who is the primary wage earner of the household with responsibility for the financial support of his wife and other dependents. Moreover, international data on the labor force participation rate of female aged would be difficult to interpret because they would reflect not only differences among countries in retirement patterns but also differences among countries in the labor force participation rate of females.

Table 1: An International Comparison of Labor Force Participation Rates of the Aged

Country	Year, Data Source	Labor Force Participation Rate of Males			
		65—69	70—74	75+	65+
Australia	1981 C	17.3	8.9		12.3
Austria	1982 LFSS	na	na	na	3.7
Belgium		na	na	na	na
Canada	1981 OE	25.7	14.5	7.1	16.3
Denmark	1981 LFSS	na	na	na	13.4
Finland	1980 C	11.1	5.5	2.4	6.8
	1982 LFSS	5.1	1.5		2.9
France	1982 LFSS	8.5	3.1	1.7	4.0
Germany, West	1982 LFSS	9.7	6.3	3.5	6.3
Greece	1981 LFSS	na	na	na	25.1
Iceland	1982 OE	50.5	46.4	7.2	32.0
Ireland		na	na	na	na
Italy	1981 C2%	11.4	4.1		6.9
	1982 LFSS	15.9	6.3		10.5
Japan	1980 C	65.2	45.0	22.9	45.5
	1982 LFSS	57.4	37.8	19.0	39.6
Luxembourg		na	na	na	na
Netherlands	1982 OE	na	na	na	3.5
New Zealand	1981 C	17.6	9.3	3.8	10.9
Norway	1982 LFSS	46.4	15.2		32.4
Portugal	1981 LFSS	na	na	na	24.4
Spain	1982 LFSS	15.7	4.1		8.3
Sweden	1982 LFSS	15.7	10.5		13.2
Switzerland	1980 C	25.7	13.5	5.8	15.1
Turkey	1980 C1%	na	na	na	43.9
United Kingdom		na	na	na	na
United States	1982 LFSS	26.5	16.3	7.9	17.1
Yugoslavia		na	na	na	na

Notes:

na denotes not available.

C denotes census.

C1%, C2% denote 1% and 2% census sample, respectively.

OE denotes official estimate.

LFSS denotes labor force sample survey.

Data Source:

International Labour Office, *1983 Year Book of Labour Statistics* (43rd issue) (Geneva: International Labour Office, 1983), Table 1, pages 13-37. The figures show the percent of each age group of males that is economically active.

60.30 to 73.70 years for the other OECD countries, while that at age 65 is 14.85 years as compared to 11.83 to 14.33 years for the other OECD countries (with the exception of Iceland, for which the corresponding figure is 15.80). Moreover, although figures for non-OECD countries are not shown in Table 2, it is a fact that Japan's life expectancy is (with the possible exception of Iceland) the highest in the world, and this will obviously tend to increase the retirement span of Japanese workers. (I have presented figures on life

Table 2: An International Comparison of Male Life Expectancy

Country	Year	Life Expectancy of Males	
		At birth	At age 65
Australia	1981	71.38	13.87
Austria	1975—80	68.97	12.97
Belgium	1972—76	68.60	12.28
Canada	1975—77	70.19	13.95
Denmark	1980—81	71.10	13.60
Finland	1981	69.53	12.83
France	1978—80	70.05	13.81
Germany, West	1979—81	69.93	13.02
Greece	1970	70.13	13.87
Iceland	1979—80	73.70	15.80
Ireland	1970—72	68.77	12.41
Italy	1974—77	69.69	na
Japan	1981	73.79	14.85
Luxembourg	1979	66.80	na
Netherlands	1980	72.40	14.00
New Zealand	1975—77	69.01	na
Norway	1980—81	72.49	14.28
Portugal	1975	65.09	12.32
Spain	1975	70.41	13.58
Sweden	1981	73.05	14.33
Switzerland	1977—78	72.00	14.20
Turkey	1975—80	60.30	na
United Kingdom			
England/Wales	1978—80	70.40	12.80
Northern Ire.	1976—78	67.76	11.83
Scotland	1979—81	68.61	11.99
United States	1979	70.00	14.30
Yugoslavia	1970—72	65.42	12.42

Note:
na denotes not available.

Data Source:
United Nations, Department of International Economic and Social Affairs, Statistical Office, ed., *Demographic Yearbook*, 1982 edition (34th issue) (New York: United Nations, 1984), Table 21, pp. 438-465.

expectancy at age 65 because these figures are better indicators of the expected retirement spans of workers approaching retirement than the figures on life expectancy at birth assuming that 65 is a good estimate of the average retirement age of all countries.)

To summarize, the virtually unsurpassed life expectancy of the Japanese has unambiguously led to a longer retirement span and this, in turn, should have contributed toward raising the aggregate household saving rate. However, the impact of the retirement age is less clear: the earlier formal retirement age will tend to lengthen the retirement span, but the much later age of complete withdrawal from the labor force will tend to shorten it. In order for us to determine the impact of retirement patterns on the length of the retirement span and thence on the aggregate household saving rate, more information is needed on the number of hours worked and on the degree to which income is reduced during the period of semi-retirement that extends from formal retirement to complete withdrawal from the labor force.

(2) The Rates of Population Growth and Productivity Growth. Table 3 presents comparative data on the average annual rate of growth of real Gross Domestic Product (GDP), real per capita GDP, and population during the 1960-70 and 1970-80 periods for all the OECD countries. Note that the rate of real per capita GDP growth is a measure of productivity growth and that, by definition, the growth rate of real GDP equals the sum of the growth rate of per capita GDP and the growth rate of population.

Looking first at population growth, the table shows that the average annual rate of population growth in Japan was 1.1 percent during the 1960s and 1.2 percent during the 1970s, which is close to the average for the OECD countries (the range was 0.0 to 2.2 percent during the 1960s and 0.0 to 1.6 percent during the 1970s if Turkey, which showed an unusually high 2.6 percent population growth rate during both periods, is excluded).[4]

With respect to productivity growth (or the growth of real per capita GDP), by contrast, Japan showed by far the highest growth rate of all OECD countries during the 1960s (9.3 percent). The next highest was Greece with 6.8 percent, while the United States registered a 3.1 percent growth rate and the range for the other OECD countries was from 2.3 to 5.9 percent. During the 1970s, Japan experienced a sharp decline in productivity growth from the earlier 9.3 percent to 3.4 percent because of the oil crises and the advent of the era of stable growth. Even so, however, because virtually every other country also recorded a decline in its rate of productivity growth, Japan's rate of growth remained higher than most other OECD countries (with only four showing a higher rate of productivity growth than Japan).

To summarize, while Japan's rate of population growth was about average for the OECD countries, her rate of productivity growth was by far the highest of the OECD countries during the 1960s and, despite registering a substantial decline during the 1970s,

4) As Modigliani notes, the growth rate of the labor force or of the working age population is a more appropriate measure for our purposes than the growth rate of the total population, but the various measures "ought to be close to each other...if population were in 'balanced growth'" (Modigliani (1970), p. 210)."

Table 3: An International Comparison of the Growth Rates of Real GDP, Per Capita Real GDP, and Population

Country	Average Annual Rates of Growth					
	1960—70			1970—80		
	Real GDP	Per Capita Real GDP	Population	Real GDP	Per Capita Real GDP	Population
Australia	5.9*	3.7*	2.2*	2.8	1.4	1.4
Austria	4.6	4.0	0.6	3.5	3.4	0.1
Belgium	4.7	4.1	0.6	3.1	2.9	0.2
Canada	5.6	3.7	1.9	4.0	2.8	1.2
Denmark	4.7	3.9	0.8	2.3	1.9	0.4
Finland	4.3	3.8	0.5	3.0	2.7	0.3
France	5.5	4.4	1.1	3.6	3.0	0.6
Germany, West	4.4	3.5	0.9	2.7	2.6	0.1
Greece	7.5	6.8	0.7	4.6	3.6	1.0
Iceland	4.5	2.9	1.6	4.5	3.2	1.3
Ireland	4.2	3.8	0.4	4.2	2.6	1.6
Italy	5.7	5.0	0.7	3.0	2.3	0.7
Japan	10.4	9.3	1.1	4.6	3.4	1.2
Luxembourg	3.4	2.6	0.8	2.6	2.0	0.6
Netherlands	5.3	4.0	1.3	2.9	2.1	0.8
New Zealand	na	na		na	na	
Norway	4.9	4.0	0.9	4.8	4.2	0.6
Portugal	5.9	5.9	0.0	4.3	3.0	1.3
Spain	7.1	5.9	1.2	3.7	2.7	1.0
Sweden	4.4	3.6	0.8	2.0	1.6	0.4
Switzerland	4.3	2.8	1.5	0.5	0.3	0.2
Turkey	6.0	3.4	2.6	6.1	3.5	2.6
United Kingdom	2.9	2.3	0.6	1.9	1.9	0.0
United States	4.4	3.1	1.3	3.0	2.0	1.0
Yugoslavia***	6.3	5.2	1.1	5.9**	4.9**	1.0**
World	5.7	3.5	2.2	3.9	2.1	1.8
Europe	4.7	3.9	0.8	2.9	2.3	0.6

Notes:

* These figures are for 1963—70.

** These figures are for 1970—79.

*** The figures for Yugoslavia refer to Net Material Product (NMP) rather than to GDP.

na denotes not available.

Data Source:

United Nations, *Yearbook of National Accounts Statistics*, volume 2, International Tables. (New York: United Nations, annual). Used primarily the 1980 and 1981 editions.

remained higher than most other OECD countries. Thus, the two factors together should have contributed toward raising Japan's aggregate household saving rate above the OECD average during the postwar period. Moreover, as seen earlier, the longer life expectancy and the earlier formal retirement age in Japan should also have contributed toward raising the aggregate household saving rate (assuming that the period from formal retirement to complete withdrawal from the labor force is not characterized by earnings of close to the magnitude prevailing prior to formal retirement).

Thus, on balance, the life-cycle hypothesis predicts that Japan should have displayed an aggregate household saving rate that is well above the average for the OECD countries, and this prediction is consistent with the high household saving rate actually observed in Japan during the postwar period. However, there are numerous other possible explanations of Japan's high household saving rate, and the foregoing analysis does not establish the dominance of the life-cycle hypothesis over these competing hypotheses. Moreover, a rigorous analysis of the various competing hypotheses is beyond the scope of this paper.

My objective for the remainder of this paper is a far more modest one: having established that, if the life-cycle hypothesis were valid in Japan, it would be capable of explaining Japan's high household saving rate, I now wish to present evidence concerning the applicability of the life-cycle hypothesis to Japan. If the evidence suggests that the hypothesis is not valid, we can conclude that the life-cycle hypothesis apparently does not provide an explanation of Japan's high household saving rate in spite of the conclusion of the foregoing analysis. If, on the other hand, the evidence suggests that the hypothesis *is* valid, we can conclude that the life-cycle hypothesis apparently does provide a partial explanation of Japan's high household saving rate although we will still not know what its explanatory power is relative to competing hypotheses.

IV The Empirical Evidence

There are at least two possible tests of the life-cycle hypothesis. The first is to test the validity of the *implications* of the life-cycle hypothesis—namely, that individuals show a "humped" pattern of wealth accumulation, accumulating saving during their working years and decumulating it (dissaving) during their retirement years. The second is to the test the validity of the basic *premise* of the hypothesis—namely, that saving for life during retirement is a major motive for saving during the individual's working years and that his accumulated savings are a primary source of income during his retirement years. We now turn to these tests in this order.

A. Tests of the Implications of the Life-Cycle Hypothesis.

The first test consists of ascertaining whether household wealth holdings display the humped pattern predicted by the life-cycle hypothesis, rising until retirement, then falling, or equivalently, whether saving flows are positive until retirement and negative thereafter.

The various household budget surveys conducted by the government are seemingly well-suited to an analysis of this issue. For example, Table 4, which is based on data from the 1982 Family Saving Survey (Chochiku Dōkō Chōsa) of the Prime Minister's Office,

Tab e 4: Household Wealth Holdings by the Age Group of the Household Head

Age group	Income	Financial Assets	Liabilities	Financial Net Worth
Worker Households				
All ages	5,024	5,911 (1.18)	1,743 (0.35)	4,169 (0.83)
— 24	3,170	1,983 (0.63)	121 (0.04)	1,862 (0.59)
25 — 29	3,592	2,508 (0.70)	848 (0.24)	1,659 (0.46)
30 — 34	3,947	3,451 (0.87)	1,458 (0.37)	1,993 (0.50)
35 — 39	4,592	4,651 (1.01)	2,072 (0.45)	2,579 (0.56)
40 — 44	5,140	5,368 (1.04)	2,367 (0.46)	3,001 (0.58)
45 — 49	5,501	6,287 (1.14)	2,050 (0.37)	4,237 (0.77)
50 — 54	6,288	7,123 (1.13)	1,724 (0.27)	5,398 (0.86)
55 — 59	6,315	11,683 (1.85)	1,236 (0.20)	10,447 (1.65)
60 — 64	5,129	11,210 (2.19)	834 (0.16)	10,376 (2.02)
65 —	4,444	9,719 (2.19)	325 (0.07)	9,394 (2.11)
All Households				
All ages	5,051	6,972 (1.38)	1,858 (0.37)	5,113 (1.01)
— 24	3,129	1,769 (0.57)	237 (0.08)	1,532 (0.49)
25 — 29	3,659	2,512 (0.69)	1,006 (0.27)	1,506 (0.41)
30 — 34	4,018	3,650 (0.91)	1,564 (0.39)	2,085 (0.52)
35 — 39	4,607	4,657 (1.01)	2,220 (0.48)	2,437 (0.53)
40 — 44	5,174	5,849 (1.13)	2,504 (0.48)	3,346 (0.65)
45 — 49	5,414	6,797 (1.26)	2,621 (0.31)	4,176 (0.77)
50 — 54	6,276	8,088 (1.29)	1,970 (0.48)	6,117 (0.98)
55 — 59	6,000	11,540 (1.92)	1,412 (0.24)	10,128 (1.69)
60 — 64	5,049	11,551 (2.29)	1,059 (0.21)	10,492 (2.08)
65 —	4,637	10,488 (2.26)	791 (0.17)	9,697 (2.09)

Notes:

The income figures refer to annual pre-tax income; the age figures refer to the age of the household head; the financial figures are in thousands of yen; the figures in parentheses represent ratios to pre-tax annual income.

Data Source:

Prime Minister's Office, Statistics Bureau (Sōrifu Tōkei-kyoku), *Chochiku Dōkō Chōsa Hōkoku* (Family Saving Survey), 1982 edition (Tokyo: Zaidan-hōjin Nippon Tōkei-kyōkai, 1983), Table 7.

Statistics Bureau (Sōrifu Tōkei-kyoku), shows wealth holdings by the age group of the household head for worker households and all households. As the table shows, the absolute amounts of both financial asset holdings and financial net worth increase monotonically through the 55-59 or 60-64 age group, then taper off slightly in the highest age group(s). By contrast, the ratio of wealth holdings to income increases continuously with age, with no tendency to taper off, even in the highest age group (except for the financial asset holdings of all households). Since the discrepancy arises due to the decline in income in the higher age groups, it appears preferable to focus on the figures showing the absolute

amounts of wealth holdings. However, even these figures show only a moderate decumulation of wealth holdings in the highest age group(s), whereas the life-cycle hypothesis would have led us to expect a much sharper rate of decumulation (unless uncertainty about the date of death moderates the rate of decumulation). Thus, the data provide only limited support for the life-cycle hypothesis.

Turning now from stock data on wealth holdings to flow data on saving, Table 5 presents data on saving by the age group of the household head that are taken from the same source as Table 4. The life-cycle hypothesis predicts a negative saving rate during

Table 5: Household Saving by the Age Group of the Household Head

Age group	Income	Change in Financial Assets		Change in Liabilities		Change in Financial Net Worth		Change in Fixed Assets		Change in Net Worth	
Worker Households											
All ages	5,024	649	(0.13)	87	(0.02)	561	(0.11)	376	(0.07)	938	(0.19)
— 24	3,170	475	(0.15)	−8	(−0.00)	482	(0.15)	0	(0.00)	482	(0.15)
25 — 29	3,592	567	(0.16)	114	(0.03)	452	(0.13)	137	(0.04)	589	(0.16)
30 — 34	3,947	411	(0.10)	118	(0.03)	293	(0.07)	361	(0.09)	654	(0.17)
35 — 39	4,592	589	(0.13)	−14	(−0.00)	603	(0.13)	280	(0.06)	884	(0.19)
40 — 44	5,140	639	(0.12)	268	(0.05)	371	(0.07)	541	(0.11)	912	(0.18)
45 — 49	5,501	609	(0.11)	105	(0.02)	504	(0.09)	492	(0.09)	997	(0.18)
50 — 54	6,288	772	(0.12)	9	(0.00)	763	(0.12)	258	(0.04)	1,022	(0.16)
55 — 59	6,315	1,140	(0.18)	−37	(−0.01)	1,177	(0.19)	390	(0.06)	1,568	(0.25)
60 — 64	5,129	734	(0.14)	64	(0.01)	670	(0.13)	631	(0.12)	1,301	(0.25)
65 —	4,444	828	(0.19)	−12	(−0.00)	840	(0.19)	89	(0.02)	929	(0.21)
All Households											
All ages	5,051	608	(0.12)	142	(0.03)	467	(0.09)	394	(0.08)	860	(0.17)
— 24	3,129	480	(0.15)	96	(0.03)	384	(0.12)	0	(0.00)	384	(0.12)
25 — 29	3,659	566	(0.15)	90	(0.02)	476	(0.13)	126	(0.03)	602	(0.16)
30 — 34	4,018	432	(0.11)	168	(0.04)	264	(0.07)	370	(0.09)	634	(0.16)
35 — 39	4,607	564	(0.12)	55	(0.01)	509	(0.11)	330	(0.07)	840	(0.18)
40 — 44	5,174	703	(0.14)	314	(0.06)	389	(0.08)	509	(0.10)	898	(0.17)
45 — 49	5,414	575	(0.11)	229	(0.04)	346	(0.06)	559	(0.10)	904	(0.17)
50 — 54	6,276	701	(0.11)	115	(0.02)	586	(0.09)	398	(0.06)	983	(0.16)
55 — 59	6,000	1,005	(0.17)	−72	(−0.01)	1,077	(0.21)	331	(0.06)	1,409	(0.23)
60 — 64	5,049	494	(0.10)	−4	(−0.00)	498	(0.10)	278	(0.06)	777	(0.15)
65 —	4,639	420	(0.09)	180	(0.04)	240	(0.05)	354	(0.08)	594	(0.13)

Notes:

The income figures refer to annual pre-tax income; the age figures refer to the age of the household head; the financial figures are in thousands of yen; the figures in parentheses represent ratios to annual pre-tax income.

Data Source:

Prime Minister's Office, Statistics Bureau (Sōrifu Tōkei-kyoku), *Chochiku Dōkō Chōsa Hōkoku* (Family Saving Survey), 1982 edition (Tokyo: Zaidan hōjin Nippon Tōkei-kyōkai, 1983), Table 27.

old age as households decumulate the wealth they have accumulated during their working years, but this table shows that saving remains positive, even in the highest age group, whether it is measured by the change in financial assets, the change in financial net worth, or the change in (total) net worth.[5] There is a tendency for the absolute amount of saving to decline after peaking in the 55-59 age group, regardless of the measure of saving used, but this tendency is not as clear when one focuses on the saving-to-income ratios because the decline in the absolute amount of saving in the upper age groups is accompanied by a decline in income.[6] Moreover, as just noted, even if one focuses on the figures for the absolute amounts of saving, the decline is not sharp enough to cause saving to become negative, as predicted by the life-cycle hypothesis. On the surface, therefore, the foregoing evidence suggests that the life-cycle hypothesis has little applicability to the case of Japan.

However, I believe that such a conclusion is premature due to the problems inherent in the data presented above. First, and perhaps most serious, the data are broken down by the age of the household head, where the household head is defined as the household member with the highest income, *not* as the household head shown on the family register. Since the elderly in Japan often live with their grown children, as we will show later, and since the elderly are likely to be retired or earning substantially less than they did during their prime working years, it is unlikely for an elderly individual to be classified as a household head if the above definition is used. A small proportion of the elderly will qualify as household heads (for example, these living apart from their grown children and those who are living with their grown children but continuing to earn an income that exceeds that of their grown children), and for these elderly, the Family Saving Survey and other similar surveys do collect information. However, these elderly are unlikely to be representative of all elderly individuals, and thus we have no direct or indirect information concerning the vast majority of elderly individuals who have been absorbed into other households.[7] It is quite possible that although the life-cycle hypothesis does not apply to the elderly who are household heads (many of whom are likely to be still employed),

5) It is not immediately clear why the stock and flow data are mutually inconsistent.

6) Kanamori (1961) analyzed similar data from the 1959 Family Saving Survey and found that aged households show a *higher* saving rate than younger households, even after controlling for income differences. This finding is even more contrary to the life-cycle hypothesis than my own finding. A more recent analysis is Mikami (1984).

Komiya suggests that the saving rate of the elderly is high because (1) consumption needs decline with age and (2) the incomes of the elderly are high due to the Annual Proportional-Wage-Increase System (Komiya (1966), pp. 172-173). However, the latter factor applies only until the age of formal retirement (generally 55 to 60) and hence cannot explain why saving remains relatively high even after age 60 although it does explain why saving is highest for the 55-59 age group. Komiya also notes that "in Japan, those who are older than 65 or 70 (whose European and American counterparts usually live on negative savings) are typically absorbed into their children's households, thus presumably contributing to society's saving by lessening social overhead expenditures which the maintenance of independent households would necessitate (Komiya (1966), pp. 173-174)." We will discuss this point further below.

7) I am indebted to Professor Albert Ando for discussions concerning this point.

it does apply to the dependent elderly (who are more likely to be retired or at least semi-retired).

A related problem is that the data pertain to households rather than to individuals. As a result, even the data for households headed by elderly individuals may not be accurate because they include the income, saving, etc., of all other household members. Thus, it is conceivable that the elderly household head is dissaving but that this dissaving is being offset by the saving being done by other household members.

Third, there is the problem of incomplete coverage of asset types. The Family Saving Survey collects stock data on financial assets and liabilities only, and flow data on financial assets, liabilities, and fixed assets only. No data are available on the other components of net worth, such as human wealth (the present value of future earnings) and private and public pension wealth (the present value of pension rights). It could be that although the components of wealth for which data are available show no marked tendency to decline during old age the components of wealth for which no information is available do show a significant tendency to decline with age.

Fourth, the data presented above are classified only by age and not by retirement status. As noted earlier, even individuals of very advanced age would not be expected to dissave if they were still working and earning a level of income that is comparable to what they were earning during their prime working years. It is quite possible that, if the data were broken down by not only age but also retirement status, the hypothesized pattern of wealth decumulation would be observed for the *retired* elderly, though not for the working elderly. In fact, indirect evidence on this point can be gleaned from Tables 4 and 5. Both tables present data separately for worker households and all households. Worker households are those households in which the head is a currently employed salaried worker, whereas the "all households" category includes not only worker households but also households in which the head is self-employed, unemployed, or retired. Thus, the "all households" category includes households in which the head is retired whereas the "worker households" category does not and we would therefore expect the wealth decumulation predicted by the life-cycle hypothesis to be more conspicuous in the data pertaining to "all households." This result is not confirmed in Table 4, which presents stock data, but is confirmed in Table 5, which presents flow data: the fall off in saving (however measured) in the two highest age groups is far more pronounced for "all households" than it is for "worker households."[8]

To summarize, although the household budget survey data presented above provide little evidence of the humped saving pattern implied by the life-cycle hypothesis, this could be the result of the deficiencies of the data rather than of the inapplicability of the life-cycle hypothesis to Japan. A more conclusive test of the validity of the implications of the life-cycle hypothesis must await the availability of data which remedy the deficiencies inherent in the Family Saving Survey and the other household budget surveys currently

8) A fifth problem with the above data is that they are cross-section data. A proper test of the life-cycle hypothesis requires data on a single age cohort over time.

being conducted.

B. Tests of the Premise of the Life-Cycle Hypothesis.

In the previous section, we were unfortunately unable to conduct a conclusive test of the validity of the implications of the life-cycle hypothesis because of the inadequacy of the data from household budget surveys. In this section, we will test the validity of the basic premise of the life-cycle hypothesis using data from a variety of attitudinal surveys. Due to the richness of these surveys and the possibility of international comparisons, we are optimistic that the second test will yield more conclusive results than the first.

Before analyzing the data themselves, however, we will first attempt to arrive at an a priori expectation concerning the validity of the premise of the life-cycle hypothesis in Japan. A review of the various cultural, institutional, and other factors that would be expected to influence the degree of validity of the life-cycle hypothesis suggests that it might be especially unlikely to apply in the case of Japan. There are basically four reasons for this conclusion:

(1) Greater Family Support. The elderly in Japan often receive substantial financial and in-kind support from their children and often live with their eldest son or other child, thereby saving on living expenses. Such traditional customs may be weakening with the passage of time, but to the extent that they still hold, "family security" will compensate for any deficiencies in "social security," and therefore the need to provide for one's own retirement will not necessarily be any greater in Japan.[9]

(2) The Higher Labor Force Participation Rate of the Elderly. As already documented, individuals in Japan often work until a very advanced age (although the hours may be fewer and the wages lower after formal retirement), and this shortens or eliminates the retirement period during which the individual has no earnings of his own.

(3) The High Level of Retirement Payments and Company Pensions. Japanese workers in larger corporations and government workers often receive substantial lump-sum retirement payments and/or company pensions. The former typically amount to two-and-a-half to four times the worker's annual salary immediately prior to retirement.

(4) The High Level of Public Pensions. Although public pension benefits were relatively low in Japan by international standards until the early 1970s, benefit levels have since been significantly upgraded and are now comparable to the levels prevailing in other industrialized countries.

To summarize, workers in Japan may not feel much need to save for life during old age since they expect to receive employment income, support from their children, retirement payments and/or company pensions, and public pensions during their old age, all of which can be used to finance their consumption needs.

I now present the evidence that will indicate whether or not my a priori expectation

9) As Komiya has noted, " 'To provide for security after retirement' seems a rather weak motive for saving in Japan, from a sociological viewpoint. Unlike the United States and some European countries, it has traditionally been held in Japan that the best way to prepare for a secure life after retirement is not to save but to bear a sufficient number of children, or to raise adopted children, who will look after the retired parents (Komiya (1966), p. 176)."

concerning the lack of validity of the basic premise of the life-cycle hypothesis is correct. There are essentially two types of evidence that bear on this issue. One is evidence on how important saving for life during retirement is as a motive for saving, while the other is evidence on how important savings accumulated during one's working years are as a source of income during retirement. I present both types of evidence in turn.

1. Evidence on Motives for Saving.

The best source of data on motives for saving is the Public Opinion Survey on Saving (Chochiku-ni kan-suru Seron-chōsa), which is conducted annually by the Central Council for Savings Promotion (Chochiku Zōkyō Chūō-iinkai). Tables 6 through 9 present data from this survey concerning the relative importance of saving for life during retirement as a motive for saving.

Looking first at Table 6, this table shows what percent of the respondents in each age group cited each motive listed as their single most important motive for saving in the 1983 survey. The results for all ages show that saving for life during retirement was the third most common response (15 percent), coming after "for illness and other emergencies" (36 percent) and "for one's children's educational and marriage expenses" (21 percent). (Fourth was "for the purchase, construction, repair, or renovation of land and housing" with 14 percent.) However, the results broken down by age group reveal considerable variation in the rankings of the various motives. Neglecting "for illness and other emergencies,"

Table 6: Motives for Saving by Age Group

Motive for Saving	Age Group						
	All	20-29	30-39	40-49	50-59	60-69	70-79
For illness and other unexpected emergencies	36.1	30.3	35.9	38.8	32.8	39.4	35.3
For life during retirement	15.4	0.6	4.4	10.4	24.5	33.0	27.4
For one's children's educational and marriage expenses	20.7	19.7	20.4	28.5	20.6	7.3	9.5
For the purchase, construction, repair, or renovation of land and housing	14.3	25.3	24.4	11.8	10.1	6.2	6.8
For the purchase of consumer durables	1.3	2.8	1.8	1.4	0.9	0.6	0.5
For travel and other leisure activities	0.9	1.7	1.0	0.5	0.8	1.7	1.6
For the payment of taxes	1.0	1.1	0.5	0.7	1.2	1.5	2.1
No specific purpose but for a feeling of security	7.0	13.5	9.0	5.4	5.4	7.5	8.4
Other	0.7	2.2	0.4	0.6	0.3	0.4	4.7
No answer	2.6	2.8	2.3	1.9	3.6	2.4	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note:

The figures indicate what percent of all respondents cited each motive as their single most important motive for saving. The figures may not add due to rounding error.

Source:

The Central Council for Savings Promotion (Chochiku Zōkyō Chūō-iinkai), *Chochiku-ni kan-suru Seron-chōsa* (The Public Opinion Survey on Saving) (Tokyo: The Central Council for Savings Promotion, 1983), 1983 edition.

which is a precautionary motive that is important for all age groups and focusing on specific motives for saving, we see that saving for one's children's educational and marriage expenses and housing-related saving are the major motives for saving until about age fifty, with housing-related saving peaking in the twenties and thirties and education- and marriage-related saving peaking in the forties (this is consistent with the typical Japanese life cycle). Saving for life during retirement is unimportant for those in their twenties, thirties, and forties (with only 1, 4, and 10 percent, respectively, of respondents in these age groups citing it as their most important motive for saving), and it does not become the dominant specific motive for saving until the 50-59 age group (33, 39, and 35 percent of those in their fifties, sixties, and seventies, respectively, cite it as their most important motive for saving). It thus appears that saving for more urgent expenditures such as housing and one's children's education and marriage preoccupy younger households, meaning that the household head is near retirement before saving for life during retirement finally becomes the foremost motive for saving. This suggests that, while the life-cycle motive is present in Japan, it is not the dominant motive for saving except for those nearing retirement.

Turning to Table 7, this table shows trends over time in the proportion of respondents

Table 7: The Importance of Saving for Life during Retirement

Year	(1)	(2)	(3)	(4)	(5)	Year	(1)	(2)	(3)	(4)	(5)
1963	41.5	(16.7)	3	—	—	1974	37.3	(14.7)	3	13.9	4
1964	37.4	(15.7)	3	—	—	1975	38.1	(14.9)	3	13.0	4
1965	29.8	(13.2)	3	—	—	1976	41.8	(16.2)	3	14.4	4
1966	31.2	(13.6)	3	—	—	1977	38.5	(14.9)	3	14.8	4
1967	37.9	(14.3)	3	10.9	4	1978	40.2	(15.9)	3	13.2	4
1968	36.6	(13.8)	3.5	—	—	1979	39.8	(15.7)	3	13.9	4
1969	36.5	(14.3)	3	—	—	1980	38.4	(15.1)	3	11.3	4
1970	38.3	(14.8)	3	12.0	4	1981	36.4	(14.6)	3	13.4	4
1971	37.5	(14.9)	3	14.2	4	1982	42.1	(16.8)	3	15.3	3
1972	37.3	(14.9)	3	14.4	4	1983	41.0	(16.3)	3	15.4	3
1973	35.7	(14.0)	3	12.5	4						

Note:

Column (1) shows what percent of the respondents cited "saving for life during retirement" as one of up to three motives for saving. Column (2) adjusts for variations over time in the average number of responses per respondent by scaling the actual percentage figure in column (1) so that the sum of the percentages for all motives equals 100. Column (3) indicates the rank of "saving for life during retirement" as a motive for saving based on the figures presented in columns (1) and (2). Column (4) indicates what percent of the respondents cited "saving for life during retirement" as their most important motive for saving (these figures have not been adjusted because, since multiple responses were not permitted, the percentages sum to 100 even without adjustment). Column (5) indicates the rank of "saving for life during retirement" as a motive for saving based on the figures presented in column (4).

Source:

The Central Council for Savings Promotion (Chochiku Zōkyō Chūō-iinkai), *Chochiku-ni kan-suru Seron-chōsa* (The Public Opinion Survey on Saving) (Tokyo: The Central Council for Savings Promotion, annual), various issues.

citing saving for life during retirement as one of their motives for saving as well as in the proportion citing it as their single most important motive for saving. The results for the former show that saving for life during retirement was consistently the third most important motive for saving, while the results for the latter show that it was consistently the fourth most important motive for saving until it overtook housing-related saving in 1982 to attain the third position. Thus, the importance of saving for life during retirement has been remarkably stable over time, showing no long-run trend and merely alternating between periods of increase and periods of decrease, each of up to several years' duration. The increase during the 1973-76 period is especially noteworthy because it was in 1973 that public pension benefits were greatly improved, and we would therefore have expected a decline in the percent saving for life during retirement after 1973. The reason why the opposite occurred is not clear, but it is also interesting to note that the upward trend has recently resumed, with both series attaining all-time highs in 1982 or 1983. A possible cause is government reports warning of the rapid aging (*kōrei-ka*) of the population and stressing the need to prepare by oneself for one's retirement.

Finally, Tables 8 and 9 allow comparisons of motive data for the United States and Japan for 1966 and 1978, respectively. The precautionary motive is not surprisingly the dominant motive in both countries, but the relative importance of the other motives exhibit interesting differences. Saving for life during retirement is by far the most important

Table 8: A U. S.-Japan Comparison of Saving Motives (1966)

Motives for saving	Japan		U. S. A.	
For illness and other unexpected emergencies	70.1	(30.5)	45	(40)
For life during retirement	31.2	(13.6)	31	(27)
For one's children's educational and marriage expenses	52.4	(22.8)	22	(19)
For the purchase, construction, repair, or renovation of land and housing	29.8	(13.0)	8	(7)
For the purchase of consumer durables	9.8	(4.3)	7	(6)
No specific purpose but for a feeling of security	20.2	(8.8)	-	(-)
All other motives	15.7	(6.7)	-	(-)
No answer	0.7	(0.3)	-	(-)
Total	229.9	(100.0)	113	(100)

Note:

The figures show what percent of the respondents indicated that they were saving for each motive. Multiple responses were permitted in the surveys of both countries but since the average number of responses per respondent was different, the figures are not directly comparable. The figures in parentheses have been scaled so that they sum to 100; they indicate what percent of all responses were for each saving motive. The figures may not add due to rounding error.

Source:

The Japanese data are from The Central Council for Savings Promotion, op. cit. (1966). The United States data are from the Consumer Expenditure Survey conducted by the University of Michigan Survey Research Center, the results of which are reproduced in Kawasaki, Akio, "Nichibei-ryōkoku ni-okeru Kojin-chochiku-dōkō-no Hikaku" (A U. S.-Japan Comparison of Trends in Personal Saving), *Chochiku Jihō*, no. 124 (June 1980), p. 46.

Table 9: A U. S.-Japan Comparison of Saving Motives (1978)

Motives for saving	Japan		U. S. A.	
For illness and other unexpected emergencies	77.9	(30.8)	51	(34)
For life during retirement	40.2	(15.9)	30	(22)
For one's children's educational and marriage expenses	50.5	(20.0)	15	(10)
For the purchase, construction, repair, or renovation of land and housing	32.2	(12.7)	8	(5)
For the purchase of consumer durables	8.7	(3.4)	6	(4)
No specific purpose but for a feeling of security	27.6	(10.9)	-	(-)
All other motives	15.3	(6.0)	42	(28)
No answer	0.7	(0.3)	-	(-)
Total	253.1	(100.0)	152	(100)

Note:
See previous table.
Source:
The Japanese data are from The Central Council for Savings Promotion, *op. cit.* (1978 edition). The U. S. data are from a public opinion survey conducted by the American Life Insurance Association, the results of which are reproduced in The Central Council for Savings Promotion, *Savings and Savings Promotion Movement in Japan* (Tokyo: The Central Council for Savings Promotion, 1981), page 18.

specific motive for saving in both U. S. surveys but is only second in Japan in both years. In terms of actual magnitudes, the two comparisons suggest that saving for life during retirement is roughly one-and-a-half to two times as prevalent in the United States. (By contrast, saving for one's children's educational and marriage expenses and housing-related saving are more important in Japan.) Thus, it appears that, while the life-cycle motive is present in both countries, it is far more important in the United States.

To sum up, we have seen that, while saving for life during retirement does occur in Japan, it is of only secondary importance (except for those nearing retirement) and its prevalence is far less than in the United States.

2. Evidence on Sources of Income during Retirement.

The second type of evidence concerning the basic premise of the life-cycle hypothesis is evidence on sources of income during retirement. An excellent source of data on this issue is provided by the International Comparative Survey on the Lives and Attitudes of the Aged (Rōjin-no Seikatsu-to Ishiki-ni kan-suru Kokusai-hikaku-chōsa), which was conducted in 1981 by the Prime Minister's Secretariat, Office for Policy toward the Aged (Naikaku-sōri-daijin-kanbō Rōjin-taisaku-shitsu). In this survey, about 1000 individuals (both male and female) aged sixty and over were surveyed in each of five countries (Japan, Thailand, the United States, the United Kingdom, and France).

Table 10 presents data from this survey on the sources of income of the elderly in each country. The table indicates that a greater percent of the elderly in the U. S. rely on "drawing down of saving deposits" than in the other four countries (22.0%), with the U. K. being second (15.2%) and Japan third (11.4%). Thus, only one out of nine

Table 10: An International Comparison of Sources of Income during Retirement

	Japan	Thailand	U. S. A.	U. K.	France
1. Employment income	41.0 (31.3)	42.1 (29.9)	27.3 (15.2)	11.6 (6.5)	5.1 (3.5)
2. Public pensions	64.6 (34.9)	4.1 (2.2)	82.1 (53.9)	87.7 (64.0)	74.9 (64.6)
3. Private pensions (company pensions, etc.)	8.4 (3.8)	0.4 (0.2)	27.1 (10.0)	35.5 (13.5)	49.3 (17.8)
4. Drawing down of saving deposits	11.4 (2.1)	6.9 (1.7)	22.0 (1.7)	15.2 (1.6)	6.9 (1.9)
5. Property income (interest, dividends, rent)	15.6 (5.3)	8.3 (3.8)	45.1 (14.5)	13.1 (2.2)	11.9 (3.6)
6. Support from one's children	29.8 (15.6)	79.7 (58.2)	2.4 (0.3)	1.7 (0.5)	3.3 (1.0)
7. Welfare	1.7 (1.2)	0.5 (0.1)	3.3 (0.7)	13.6 (3.1)	4.3 (1.2)
8. Other	4.8 (3.1)	5.2 (3.4)	8.2 (3.5)	5.7 (2.6)	4.7 (3.3)
9. No answer	1.0 (2.7)	0.5 (0.5)	0.1 (0.2)	0.9 (6.1)	0.5 (3.1)
10. Totals	178.4	147.7	217.6	184.9	161.0

Note:

The figures are from an international survey of aged individuals (those aged 60 or more) and indicate the percent of respondents citing each source listed as one of their sources of income. The figures in parentheses indicate the percent of respondents citing each source as their primary source of income.

Source:

Prime Minister's Secretariat, Office for Policy toward the Aged (Naikaku-sōridaijin-kanbō Rōjin-taisaku-shitsu), ed., *Rōjin-no Seikatsu-to Ishiki* (The Lives and Attitudes of the Aged) (Tokyo: Ministry of Finance Printing Bureau [Ōkura-shō Insatsu-kyoku], 1982), page 194.

elderly in Japan rely on drawing down of saving deposits as a source of income, a proportion which is about half of the corresponding proportion in the United States. This evidence suggests that dissaving during retirement, which is an integral part of the life-cycle model, is apparently not widespread in any country and far less widespread in Japan than it is in the United States. If one focuses on the figures for the percent relying on drawing down of saving deposits as their *principal* source of income, the figures are even lower, but here, the figure for Japan is the highest (2.1% vs. 1.6—1.9% for the other countries). Even when one looks at the figures for the percent relying on *either* drawing down of saving deposits *or* property income (interest, dividends, rent, etc.) as their principal source of income, the figures are quite low (ranging from 16.2% for the United States and 7.4% for Japan to 5.5% or lower for the other three countries). Thus, these figures provide only very limited support for the life-cycle hypothesis and suggest that it is even less applicable in Japan than it is in the United States.

Also noteworthy is the contrast between Japan (and Thailand) and the West with respect to the degree of reliance on support from one's children, which confirms what I stated earlier. As Table 10 shows, only a very small percent (1.7 to 3.3 percent) of the

elderly in the U. S. and Europe receive any support at all from their children, whereas 29. 8 percent of the elderly in Japan receive support from their children. Moreover, the contrast in the percent of the elderly relying on support from their children as their primary source of income is equally striking (0. 3 to 1. 0 percent in the U. S. and Europe versus 15. 6 percent in Japan).

To summarize the other findings more briefly, the table also shows that the percent of elderly individuals relying on employment income is much higher in Japan (and Thailand) than in the West and that the percent relying on public pensions is somewhat lower in Japan (and much lower in Thailand), which again confirms what I stated earlier. The finding that the percent relying on private pensions is also lower in Japan (and Thailand) is seemingly at variance with what I stated earlier, but the discrepancy probably arises because lump-sum retirement payments were not included either separately or with private pensions in the question on the survey. Thus, the table confirms my earlier claims in addition to attesting to the limited applicability of the life-cycle hypothesis in Japan.

A very different type of evidence on the same issue was obtained elsewhere in the same survey. Respondents were asked: "Which of the following views coincides most closely with your own view about living expenses during retirement? (1) One should prepare for retirement during one's working years and not depend on one's family or on others. (2) One's family members should meet one's living expenses during retirement. (3) One's living expenses during retirement should be financed by social security." Table 11 presents the results for each country. As the table shows, view (1) (which corresponds most closely to the life-cycle model) is predominant in the United States and Japan, while view (2) is predominant in Thailand and view (3) is predominant in the United Kingdom and France. It is somewhat surprising that the percent of the respondents adhering to

Table 11: An International Comparison of Attitudes toward the Financing of One's Living Expenses during Retirement

	Japan	Thailand	U. S. A.	U. K.	France
View 1: One should prepare for retirement during one's working years and not depend on one's family or on others.	55. 0	24. 7	60. 7	44. 2	27. 5
View 2: One's family members should meet one's living expenses during retirement.	18. 8	61. 4	0. 6	0. 2	2. 2
View 3: One's living expenses during retirement should be financed by social security.	21. 8	10. 6	29. 1	47. 1	66. 1
Other	2. 5	0. 8	6. 0	6. 4	2. 9
No Answer	1. 9	2. 5	3. 6	2. 1	1. 3
Total	100. 0	100. 0	100. 0	100. 0	100. 0

Note:
The figures represent the percent of respondents indicating that their own view corresponds most closely to each view.

Source:
Prime Minister's Secretariat, Office for Policy toward the Aged, *op. cit.*, page 182.

view (1) is as high as it is, especially in the United States and Japan, given the earlier evidence concerning the limited applicability of the life-cycle model. This discrepancy suggests that the life-cycle hypothesis is much more applicable in all countries when one goes by people's *intentions* or *attitudes* than it is when one goes by *actual results*. In other words it seems that many people intend to finance their lives during retirement with their own savings or feel that this is the most desirable state of affairs but, after reaching retirement age, find that their savings are insufficient and are forced to rely on support from their children, public pensions, and other sources of income.

Another conclusion suggested by the results is that the life-cycle hypothesis is perhaps most applicable in the United States and also more applicable in Japan than in other countries. At the same time, however, it should be noted that views (2) and (3) are also relatively common in Japan and that view (2) is far more common in Japan (and Thailand) than it is in the United States and Europe. This is consistent with the earlier finding that reliance on family support as a source of retirement income is far greater in Japan (and Thailand) than in the United States and Europe. Thus, while it is true that the life-cycle hypothesis is highly applicable in Japan as far as people's intentions and attitudes are concerned, reliance on family support is far greater in Japan (and Thailand) than in the West whether one goes by people's intentions and attitudes or by actual results.

The far greater importance of family support in the East is illustrated even more dramatically in Table 12, which shows with whom elderly individuals tend to live in each country. The table shows quite clearly that the elderly are far, far more likely to live with their children (and grandchildren) (and presumably to receive support in kind) in

Table 12: An International Comparison of the Living Arrangements of the Elderly

	Japan	Thailand	U. S. A.	U. K.	France
1. Your spouse	65.4	51.1	47.0	49.1	55.8
2. Your married child (male)	41.0	25.3	0.9	0.5	3.5
3. Your married child (female)	9.2	37.8	2.5	1.9	5.6
4. Your child's spouse	34.0	49.2	1.6	0.7	3.5
5. Your unmarried child	18.7	33.0	9.0	5.1	10.6
6. Your grandchild	41.0	62.6	3.8	1.1	5.8
7. Other relatives	2.9	8.2	4.1	4.2	5.3
8. Non-relatives	0.7	3.4	2.3	1.2	1.0
9. Living alone	5.7	4.7	41.3	41.6	30.0
No answer	0.3	0.0	0.3	0.0	0.4
Totals	219.0	275.3	112.8	105.3	121.7

Note:
The figures indicate the percent of respondents who currently live with each category of family member.

Source:
Prime Minister's Secretariat, Office for Policy toward the Aged, *op. cit.*, page 51.

Japan and Thailand than in the United States and Europe. For example, 41.0 percent of the elderly surveyed in Japan live with their married sons whereas the corresponding figure for the United States and Europe is only 0.5 to 3.5 percent. (The percent of the elderly living with their married daughters is lower due to cultural reasons but is still much higher than it is in the West.) In addition, the percent of the elderly living with their children's spouses and with their grandchildren is also much higher in Japan than in the West (34.0 percent versus 0.7 to 3.5 percent for the former and 41.0 percent versus 1.1 to 5.8 percent for the latter).

Thus, it appears that there is a close connection between the prevalence of family support of the elderly and the prevalence of extended family living arrangements. Both are negligible in the West and very high in Japan (and Thailand). This relationship is, of course, not entirely coincidental inasmuch as living together with one's parents is itself a form of assistance (allowing the parents to save on housing costs) and also facilitates other transfers in kind (such as the sharing of food and other living expenses).

To summarize the results of this section briefly, it appears that the basic premise of the life-cycle hypothesis is most valid in the United States and also has some validity in Japan. A key difference between Japan and the West, however, is the far greater reliance on support from one's children during retirement.

V Toward a Modified Life-Cycle Hypothesis

Having found that the life-cycle hypothesis has only limited validity in the case of Japan, the next logical step is to consider what alternative hypothesis or what modification of the life-cycle hypothesis would provide a better description of the behavior of Japanese individuals. The foregoing evidence strongly suggests that the support received by the elderly from their children must be given a role in any model of Japanese life-cycle behavior in light of the far greater prevalence of such support in Japan. In addition, it appears desirable to confer a role on bequests as well inasmuch as casual observation suggests that they are relatively prevalent in Japan.

To assist in our inquiry, I now present data on the attitude of the Japanese toward bequests that are taken from the Attitude Survey on Wealth Transmission (Shisan-sōzoku-ni tsuite-no Ishiki-chōsa), which was conducted in 1979 by the Prime Minister's Secretariat, Office for Policy toward the Aged (Naikaku-sōri-daijin-kanbō Rōjin-taisaku-shitsu). One question in this survey concerned the pollees' attitudes toward the division of their wealth among their children; in particular, they were asked to indicate which of the four views listed ("Give all to the eldest son," "Give to the child who is ill or physically weak or who has no income-earning power," "Divide equally among one's children," and "Give more to the child or children who did more for me") coincided most closely with their own view. The results, which are shown in Table 13, indicate that the most common responses were "Give everything to the eldest son" (43.2 percent) and "Give more to the child or children who did more for me" (35.1 percent). These two responses account for more than three-quarters of the respondents. Moreover, since custom decrees that the eldest

Table 13: The Attitudes of the Elderly in Japan toward the Distribution of Their Assets among Their Children

	Total	Males	Females
Total	100.0	100.0	100.0
Give all to the eldest son	43.2	45.4	19.7
Give to the child who is ill or physically weak or who has no income-earning power	4.3	4.1	5.6
Divide equally among one's children	12.1	11.4	19.2
Give more to the child or children who did more for me	35.1	34.0	46.5
Other	2.8	2.6	4.0
No Answer	2.6	2.3	5.1

Note:

The figures represent the percent of respondents whose own views coincide with each of the views presented.

Source:

Prime Ministers Secretariat, Office for Policy toward the Aged (Naikaku-sōri-daijin-kanbō Rōjintaisaku-shitsu), "Shisan-sōzoku-ni tsuite-no Ishiki-chōsa" (Attitude Survey on Wealth Transmission) (1979), the results of which are summarized in Prime Minister's Secretariat, Office for Policy toward the Aged (Naikaku-sōri-daijin-kanbō Rōjin-taisaku-shitsu), ed., *Kōrei-sha Mondai Sōgō Chōsa-Hōkoku* (Comprehensive Report on Surveys concerning the Problems of the Aged) (Tokyo: Shakai-fukushi-hōjin Zenkoku Shakai Fukushi Kyōgikai, 1982), page 222.

son live with his aged parents and provide them with whatever assistance is needed, the response "Give everything to the eldest son" can be regarded as a subset of the response "Give more to the child or children who did more for me." Thus, it can be said that over three-quarters of the respondents felt that their wealth should be distributed among their children according to the amount of (financial and other) assistance received from each child.

I am now ready to synthesize the evidence I have presented into a modified version of the life-cycle hypothesis. We saw earlier that, to the extent that the life-cycle hypothesis does not apply to Japan (i. e., to the extent that living expenses during retirement are not financed by dissaving), much of the "shortfall" is met by support from one's children. Moreover, as just noted, the elderly in Japan appear to distribute their wealth among their children primarily on the basis of the amount of assistance received from each child. Thus, they in effect "borrow" from their children in order to finance their living expenses during retirement and repay these "debts" in the form of a bequest at the time of their death. This implies that, even if much of the saving of the Japanese were ostensibly for bequests, it would in reality be for life-cycle purposes, inasmuch as the bequest is indirectly used to finance consumption during retirement. Thus, although the standard life-cycle hypothesis is of only limited applicability in Japan, a variant of it appears to provide a reasonably good description of saving behavior in Japan.[10]

10) Bernheim, Shleifer, and Summers (1984) have conducted an interesting game-theoretic analysis of bequests which demonstrates how parents can use the way in which their wealth is to be distributed as a means of coercing their children into looking after them. It is unclear whether Japanese parents consciously think in these terms, but the end result appears to be the same.

The only remaining question—namely, why the Japanese conform to the "modified" life-cycle hypothesis rather than to the standard version—is not so easily answered, but several possible reasons come to mind.

(1) The elderly in Japan are loath to bear the risk of an uncertain lifespan, so they shift this risk onto their children by asking them to support them for the rest of their lives (no matter how long that turns out to be) in exchange for a fixed payment (the bequest).

(2) Because of the relatively high price of land and housing in Japan, a higher proportion of the wealth of the elderly is in the form of land and housing, and because land and housing are far less liquid than other types of assets, it is difficult for the elderly to finance their living expenses during retirement by liquidating their wealth holdings. (If it were true that the Japanese have a stronger preference for living in owner-occupied (single-family) homes, this would also help to explain why they are reluctant to sell their homes since "reverse mortgages" are still rare in Japan.)

(3) Making substantial bequests to one's children, especially one's eldest son, is a custom with a long history in Japan because the family is a much more closely knit unit in Japan than in other countries.[11] In particular, there is a long standing custom of bequeathing one's home to one's eldest son, which would, together with (2), explain why the Japanese refrain from selling their homes to finance their living expenses during retirement.

(4) As another consequence of the strength of the family unit, Japanese children feel a strong obligation to provide (economic as well as other forms of) assistance to their aged parents.

As the foregoing list of possible reasons suggests, the issue of why the Japanese tend to conform to the modified life-cycle hypothesis may be related to Japanese culture and traditions, although it may also be partly due to economic factors such as (1) and (2).

At any rate, it appears that the life-cycle hypothesis or a modified version thereof may be valid for the case of Japan after all and hence may provide a partial explanation of Japan's high household saving rate. However, more rigorous empirical tests are clearly necessary before a definitive verdict can be rendered.

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11) Moreover, the strength of the family unit in Japan leads to other intergenerational transfers as well. For example, parent-to-child transfers include not only bequests but also extensive assistance with educational, marriage, and other major expenses (recall the earlier finding that saving for one's children's educational and marriage expenses is the major specific motive for saving among middle-aged households). As Komiya has noted, "the economic burden placed upon Japanese parents by children's education, marriage, and post-marriage assistance, is clearly heavier than that upon European and American parents (Komiya (1966), p. 173)."

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